DOCUMENT RESUME

ED 240 028 SO 015 401

AUTHOR Rampy, Leah Moran
TITLE We Teach the Children: Computer Literacy as a Feminist Issue.
PUB DATE Jan 84
NOTE 11p.; Revision of a paper presented at the National Women's Studies Conference (Columbus, OH, June 26-30, 1983).
PUB TYPE Viewpoints (120) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Computer Literacy; *Computer Science Education; Differences; *Educational Opportunities; Elementary Secondary Education; *Equal Education; Equal Facilities; Feminism; Regional Characteristics; *Sex Bias; Sex Discrimination; Sex Fairness; Social Discrimination; *Socioeconomic Influences; Womens Education

ABSTRACT

Preliminary research on the distribution and use of computers in public schools indicates the existance of socioeconomic, regional, and sex inequalities. Inequity is found in the ownership of computers by non-Southern schools and by schools serving students from middle and high socioeconomic levels. Within schools owning computers, inequity is found in the allocation of work time at the machines and the lack of programming classes for all students. Because computers seem destined to play a critical role in the economic structure of the future, educators and parents must begin work immediately to plan ways to insure equal computer education for all students. (LP)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED240028

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

✓ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Leah Moran Rampy

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

WE TEACH THE CHILDREN: COMPUTER LITERACY AS A FEMINIST ISSUE

By
Leah Moran Rampy
Department of Curriculum and Instruction
College of Education
University of Houston

January 1984

Revised from a paper presented at the
National Women's Studies Conference
Columbus, Ohio
June 26-30, 1983

SP 015 401

TEACHING THE CHILDREN: COMPUTER LITERACY AS A FEMINIST ISSUE

by Leah Moran Rampy, University of Houston. The following article is revised from a paper presented at the National Women's Studies Conference, Columbus, Ohio, June 26-30, 1983.

The use of computers in business, industry, and education is not a new phenomenon. But the shrinking size and cost, as well as the increasing capability of microcomputers, has resulted in a rapid increase in their use in homes and schools. Over half a million personal computers were sold in 1980 and this total, by some estimates, is expected to increase by 40 percent annually (Naisbitt, 1982). A national survey conducted at Johns Hopkins University determined that as of January 1983, 53 percent of the public schools in the United States were using at least one microcomputer for instructional purposes (Center for Social Organization of Schools [CSOS], 1983). Parental groups in many districts, eager for their children to learn about computers, have provided the funds for and the pressure to purchase microcomputers. State legislatures and departments of education have also encouraged, and in some cases, mandated instructional computing.

Futurists and educators seem to agree that "computer illiteracy" will handicap children in the future (Coburn, et al., 1982; Evans, 1979; Naisbitt, 1982; Shane, 1982; Zimmerman, 1981). Naisbitt notes that, by one estimate, "75 percent of all jobs by 1985 will involve computers in some way" (p. 33). Thomas Miller of Control Data Corporation predicted in 1983 that four out of the five professions that experience the greatest growth

in the next five years will deal with computers. Zimmerman (1981) cautions that by the year 2000, those who cannot use a computer will be excluded from many day-to-day activities and, most certainly, from power.

Because computers seem destined to play a role in the future, all children should be receiving experiences which will allow them to become wise computer-users. Although these experiences could come in the home, the present trend suggests that schools will assume responsibility for computer education. Some studies suggest, however, that computer education is off to a shaky start. Some writers argue that today's schools may not be preparing boys and girls equally for a future where knowledge of technology may be equated with power (Turkington, 1982; Zimmerman, 1981). Others voice fear that a computer-knowledge gap is growing between urban, suburban, and rural students and between students in different regions of the country.

This paper will address those concerns by reviewing some of the recent research concerning computer education and equity. Four questions help to focus on the equitable use of computers:

1. Who gets computers? Are computers for instructional use equitably distributed among schools regardless of regional and socio-economic boundaries?
2. Who uses the computers? Do all students in schools with computers have equal time for instructional computing?
3. How are computers used? Do students learn programming? Word processing? Are computers used chiefly for drill-and-practice?

4. What perceptions do students hold about computers? Are computers considered "mathematical" and of greater interest to boys?

Although far from conclusive, research is beginning to provide some answers to these questions of equity.

Who Owns Computers?

Even though the number of schools using microcomputers for instructional purposes has grown to 27,500 by some estimates (Ingersoll, Smith, & Elliot, 1982), not ALL schools have computers. Nor are schools using microcomputers for instructional purposes equally divided across all regions of the U.S. According to data collected at the University of Minnesota (Anderson, 1983), only 24 percent of high school seniors in the South who were interviewed had the opportunity to work with a computer compared with 33 percent of the seniors in the West and North and 40 percent of the seniors in the Central U.S. This regional disparity is also found at the elementary level. The Johns Hopkins survey noted that although 48 percent of public elementary schools outside of the South had at least one microcomputer, only 29 percent of those in the South had any computers (CSOS, 1983).

Inequity of computer ownership exists by socio-economic status as well as by region. Elementary schools serving low-income families and minorities and those with lower incomes were less likely than other schools to have a microcomputer (CSOS, 1983). According to the University of Minnesota study

(Anderson, 1983), 32 percent of the urban 13 year-olds had access to a computer at school compared to 18 percent of the getto youth and 15 percent of the rural youth.

If indeed those with knowledge of computers will become more powerful than their "computer illiterate" peers, then educators and parents must view with alarm the disparity among the regions and the socio-economic levels. If indeed jobs of the future will require computer use, then students who attend schools which do not have computers for instructional purposes will surely be handicapped.

Who Uses Computers?

Attending a school with computers is only half of the battle; even when computers are in the schools, access to them is often inequitable. Because of the large ratio of students to computers, individuals in most schools are unable to work at a computer for extended periods of time. The CSOS (1983) survey found that, for the 1100 computer-using schools that responded, only two percent of the schools provided over 60 minutes of computer time per week for per student; 20 percent provided 31 to 60 minutes per week; and 70 percent, 16 to 30 minutes. The median time for computer use for elementary students working on programming was 19 minutes per week.

Given few machines and little time, who gets to use computers? The Minnesota study found that in schools with five or more computers, 60 percent of the students had not used the computers (Anderson, 1983). Who is using the computers? Daniel

Watt noted that "boys often have a clear idea of what they want to do with the computers, while girls use them in more exploratory ways, and are consequently less aggressive about having a turn at the machine" (Cited in Rosser, 1982, p. 15). A look at what happens in a situation where a group of students competed for one computer supports Watt's premise.

In a study by Silvern and colleagues (1982) to determine how children use the computer "naturally," a computer was placed in a university laboratory school classroom during the summer months. Thirty-nine children, ages 4 to 8, were allowed to use the computer during "center" time which lasted at least one hour each day. The researchers found that one-third of the children enrolled in the lab chose to use the computer; 85 percent of the users were boys. The reports of the observers for this study indicated that students were well aware of the time when computer-use was allowed and took steps to move close to the computer as that time approached. The following report illustrates how the computer was "reserved" by students.

> Once in close proximity to the chairs in front of the screen, physical space was reserved by resting an elbow or draping an arm across the seat of the chair. As the teacher indicated the end of circle time the chairs were occupied by a jump off the floor directly into the chair, reminiscent of two children going for the last chair in musical chairs. If two bottoms hit the seat at the same time, then the most powerful of the two took control of the chair. The final jump to the chair usually took place in teacher's mid-sentence. For example, Teacher: "All right, we're going to have center time from now" (children jump into the chairs) "until 10:30." Since research has indicated that young girls are not as aggressive as young boys, this ritual may have been instrumental in keeping the girls away from the computer. (p. 7)

Since the students in this study had access to only one computer and never moved beyond the "arcade game" stage, it is difficult to determine if those who utilized the computer were more aggressive than the other children or if the type of computer activity appealed to them more than to the others. Nevertheless, given the present shortage of hardware, educators must attend carefully to who is using the hardware and intervene when necessary to promote equity.

How Are Computers Used?

A third equity issue concerns the way in which computers are used by students. Although both Computer Assisted Instruction (CAI) and programming can be beneficial to student learning, programming provides the learner with a sense of control over the machine and a greater understanding of the limitations and advantages of computers. Coburn and his colleagues (1982) advance three arguments for learning programming: 1) to prepare for future jobs; 2) to prepare for decision making in a computer-rich society; and 3) to enhance intellectual capabilities.

In spite of the importance of a general knowledge of programming, girls are not as likely as boys to sign up for computer programming classes. A study at the University of California (Berkeley) found that girls made up 37 percent of the students enrolled in computer-science classes state-wide (Rosser, 1982). Ron Anderson, director of Minnesota's Computer Literacy Project, reported that, according to a nation-wide survey, 14

percent of the males and 9 percent of the females age 17 have taken a computer programming course. He also noted that girls performed "slightly less well" on nationwide programming tests; when they had "good computer exposure," however, the girls performed as well as or better than boys (Rosser, 1982). High school boys admitted to one researcher that they harassed girls in an attempt to discourage the girls from taking computer courses; without girls in the classes, the boys had more time at the computer. As Stage and Kreinberg (1982, p. 5) warn: (The) "absence of young women from computer science courses in their pre-college and post-secondary years can only result in another 'critical filter' for women," preventing their later entry into fields dependent upon knowledge of computer use and programming.

How Do Students View Computers?

Whether students enroll in programming courses or "fight" for a turn at the computer is no doubt influenced by their perceptions of the importance, relevance, and "fun value" of computers. Stage and Kreinberg (1982) reported on the responses of girls who were "asked to imagine they were 30-years old and describe how they would be using a computer."

> When I am 30 I'll have a computer that has long arms that can clean the house and cook meals. And another computer that has a little slot that money comes out to pay for groceries and stuff. (6th grade female)

> I would ask my computer to find me a perfect husband. I would tell it to tell me where to find the prettiest clothes and tell me where to get my hair done. Tell me where the most famous restaurant is in the world. Then I would meet my future husband, get married, have children--two named Ben and Angie--then I

> would get a divorce and raise my children on my own till they're grown. And then it's just me and my computer. All alone again. (7th grade female)

Girls saw the computer as useful for home chores, whereas boys concentrated on using the computer for finances or games. In other words, while girls feel that the computers will be labor-saving devices in the home, boys believe that computers will be helpful in their career. These differences in perceptions about how computers will be used may help to explain why boys are more likely to enroll in programming classes and to "fight" for their turn at the computer.

Conclusion

At present, the distribution and use of computers in schools is far from equitable. Inequity is found in the ownership of computers by non-Southern schools and by schools serving students from middle and high socio-economic levels. Inequity is found in the unequal allocation of work-time at the computer and the lack of programming classes for all students. Although research is incomplete, the picture it sketches suggests that educators and parents must begin work immediately--while computer education curriculum is still in a formative stage--to redress the present inequities and to plan for ways to provide computer education to all students.

REFERENCES

Anderson, R.E. (1983, June). Computer inequities in opportunities for computer literacy. In A. Luehrmann (Chair), Computers, Society, and the Need for Computer Literacy. Session conducted at the Computer Literacy Symposium, Balitmore, MD.

Center for Social Organization of Schools (1983). School uses of microcomputers: Reports from a national survey. (Issues 1-3). Baltimore, MD: Johns Hopkins University..

Coburn, P. et. al. (1982). Practical guide to computers in education. Reading, MA: Addison-Wesley.

Evans, C. (1979). The micro millenium. New York: Washington Square Press.

Miller, T. (1983, June). Computer literacy. Paper presented at the Computer Literacy Symposium, Baltimore, MD.

Naisbitt, J. (1982). Megatrends: Ten new directions for transforming our lives. New York: Warner Books.

Rosser, P. (1982, December). Do schools teach computer anxiety? Ms., p. 15.

Shane, H. (1982) The silicon age and education. Phi Delta Kappan, 63, 303-308.

Silvern, S.B., Countermine, T.M, & Williamson, P.A. (1982, March). Young children's interaction with a microcomputer. Paper presented at the Annual Meeting of the AERA, New York.

Stage, E.K. & Kreinberg, N. (1982, November). Equal access to computers. Paper presented at the Eighth Annual Midyear Conference of the AERA Special Interest Group, Research on Women in Education, Philadelphia.

Turkington, C. (1982). Computers in class: Who gets to learn? APA Monitor, 13 (6), 1-30.

Zimmerman, J. (1981). Technology and the future of women: Haven't we met somewhere before? Women's Studies International Quarterly, 4, 355-367.